

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

Claim 1 (currently amended): A method of manufacturing a molded composite structure, comprising:

preparing a material stack, wherein the material stack comprises a core section

having first and second opposing sides, and wherein preparing the

material stack comprises:

applying a substantially fibrous support layer on at least one of the first

side and the second side of the core section, wherein the

substantially fibrous support layer provides a vacuum path for

evacuation of the core section;

applying an adhesive layer on the support layer; and

applying a thermoplastic barrier layer on the adhesive layer;

preparing a resin;

preparing a mold;

placing the material stack in the mold;

evacuating air from the core section of the material stack through the vacuum

path provided by the substantially fibrous support layer;

sealing the evacuated core section by curing the adhesive layer to adhere the

support layer and thermoplastic barrier layer to the core section;

infusing the mold and material stack with the resin to form the structure;

curing the structure; and

removing the structure from the mold.

Claim 2 (original): The method of claim 1, wherein material stack preparing further comprises:

applying a laminate layer on at least one of the first side and the second side of the core section.

Claim 3 (original): The method of claim 1, wherein material stack preparing further comprises:

preparing at least two material stacks, wherein at least one of the material stacks comprises a core section having first and second opposing sides and at least one of the material stacks does not comprise a core section;

Claim 4 (canceled).

Claim 5 (canceled).

Claim 6 (canceled).

Claim 7 (previously presented): The method of claim 1, wherein material stack preparing further comprises:

applying a laminate layer on the thermoplastic barrier layer.

Claim 8 (original): The method of claim 7, wherein laminate layer applying further comprises:

applying the laminate layer with a specified fiber orientation.

Claim 9 (original): The method of claim 8, wherein mold preparing further comprises:

reducing the modification of the fiber orientation during resin infusion.

Claim 10 (original): The method of claim 9, wherein the mold comprises a shape and an internal pressure and wherein reducing further comprises:

altering the shape and the internal pressure of the mold.

Claim 11 (canceled).

Claim 12 (original): The method of claim 1, wherein mold preparing further comprises:

preparing a first tool to form an exterior shape of the structure; and

preparing a second tool to form an interior shape of the structure.

Claim 13 (original): The method of claim 12, wherein the second tool includes an elastomeric tool.

Claim 14 (original): The method of claim 1, wherein placing further comprises:

applying a release agent to the mold and to the material stack; and

placing the material stack in the mold.

Claim 15 (original): The method of claim 1, wherein the material stack includes cavities, and wherein infusing further comprises:

closing the mold;

sealing the mold;

creating a vacuum in the mold; and

infusing the mold with the resin until the cavities in the material stack are filled with resin.

Claim 16 (previously presented): The method of claim 1, wherein curing the structure further comprises:

applying heat to the mold.

Claim 17 (previously presented): The method of claim 1, wherein curing the structure further comprises:

applying pressure to the mold.

Claim 18 (original): The method of claim 1, wherein the structure has an exterior surface resulting in a smooth laminar flow of air over that surface.

Claim 19 (original): The method of claim 1, wherein the structure is a wing panel for an aircraft.

Claim 20 (original): The method of claim 1, wherein the structure is a semi-span wing for an aircraft.

Claim 21 (original): The method of claim 1, wherein the structure is a full-span wing for an aircraft.

Claims 22-44 (canceled).

Claim 45 (currently amended): A method of manufacturing a molded composite structure, comprising:

preparing at least one material stack, wherein the material stack comprises a core section and cavities, wherein the core section comprises first and second opposing sides, and wherein preparing the material stack comprises:

applying a substantially fibrous support layer on at least one of the first side and the second side of the core section, wherein the substantially fibrous support layer provides a vacuum path for evacuation of the core section;

applying an adhesive layer on the support layer; and

applying a thermoplastic barrier layer on the adhesive layer;
preparing a resin;
preparing a first tool to form an exterior shape of the structure;
preparing a second tool to form an interior shape of the structure;
integrating the second tool with the material stack;
placing the material stack with the second tool inside of the first tool;
evacuating air from the core section of the material stack through the vacuum
path provided by the substantially fibrous support layer;
sealing the evacuated core section of the material stack by curing the adhesive
layer to adhere the support layer and thermoplastic barrier layer to the
core section;
infusing the first tool with the resin until the cavities in the material stack are filled
with resin to form the structure;
curing the structure;
removing the structure from the first tool; and
removing the second tool from the structure.

Claim 46 (original): The method of claim 45, wherein material stack preparing
further comprises:

preparing at least two material stacks, wherein at least one of the material stacks
comprises a core section having first and second opposing sides and at
least one of the material stacks does not comprise a core section.

Claim 47 (canceled).

Claim 48 (canceled).

Claim 49 (canceled).

Claim 50 (previously presented): The method of claim 45, wherein material stack preparing further comprises:

applying a first laminate layer on the first thermoplastic barrier layer; and
applying a second laminate layer on the second thermoplastic barrier layer.

Claim 51 (canceled).

Claim 52 (original): The method of claim 50, wherein first laminate layer applying and second laminate layer applying further comprise:

applying the first and second laminate layer with a specified fiber orientation.

Claim 53 (original): The method of claim 52, wherein first tool preparing and second tool preparing further comprises:

reducing the modification of the fiber orientation during resin infusion.

Claim 54 (original): The method of claim 53, wherein the first tool comprises a shape and an internal pressure and wherein reducing further comprises:

altering the shape and the internal pressure of the first tool.

Claim 55 (original): The method of claim 45, wherein the second tool includes an elastomeric tool.

Claim 56 (original): The method of claim 55, wherein infusing further comprises:
altering the internal pressure in the elastomeric tool to alter the rate of infusion.

Claim 57 (original): The method of claim 45, wherein integrating further comprises:

applying a release agent to the second tool; and placing the second tool in the
material stack.

Claim 58 (original): The method of claim 45, wherein placing further comprises:
applying a release agent to the first tool; and
placing the material stack with the second tool inside the first tool.

Claim 59 (previously presented): The method of claim 45, wherein adhesive layer curing and structure curing occur at substantially the same temperature.

Claim 60 (previously presented): The method of claim 45, wherein adhesive layer curing occurs at a higher temperature than structure curing.

Claim 61 (previously presented): The method of claim 45, wherein adhesive layer curing occurs at a lower temperature than structure curing.

Claim 62 (original): The method of claim 45, wherein infusing further comprises:
sealing the first tool; and
creating a vacuum in the first tool.

Claim 63 (previously presented): The method of claim 45, wherein structure curing further comprises:

applying heat to the structure; and
applying pressure to the structure.

Claim 64 (original): The method of claim 45, wherein the structure is a wing panel for an aircraft.

Claim 65 (original): The method of claim 45, wherein the structure is a semi-span wing for an aircraft.

Claim 66 (original): The method of claim 45, wherein the structure is a full-span wing for an aircraft.

Claims 67-100 (canceled).

Claim 101 (previously presented): The method of claim 53, wherein the first tool has an interior surface, and the second tool has an exterior surface, and wherein reducing the modification of the fiber orientation during resin infusion comprises:

aligning the interior surface of the first tool with the exterior surface of the second tool.

Claim 102 (previously presented): The method of claim 101, wherein the second tool comprises a semi-rigid thermoplastic bladder.

Claim 103 (canceled).